THE ISSUE

This fact sheet is a supplement to the WACO Health Consultation, produced by the Missouri Department of Health and Senior Services (DHSS) and the Agency for Toxic Substances and Disease Registry (ATSDR), May 19, 2003. This information addresses health concerns expressed to ATSDR in a letter from the SHOW-ME citizen action group about five Missouri sites. The letter states that the five sites are within a two-mile radius of the Washington County (Waco) landfill, however after a review of these sites it was determined that they are located within a seven-mile radius of the landfill. The letter also suggests a link between exposures to different contaminants at these sites and various health problems in children living nearby.

In response to SHOW-ME's concerns and at ATSDR's request, DHSS investigated the five sites to determine whether and to what extent past and present human exposure to contaminants occurred at these sites. Based on its findings, DHSS concluded that no individuals experienced cumulative, long-term exposures to site contaminants that could potentially cause any adverse health effects. In addition, the organ systems these chemicals could affect did not correspond to the problems suggested in the SHOW-ME letter.

THE SITES

(1) THE HAYNES SITE

Discovered in 1977, the Haynes site was a non-permitted solid waste dump that was ordered closed by the EPA in the same year. It is located off Highway A west of Richwoods, within a six-mile radius of the landfill. The site drains to a different watershed than the Waco landfill, providing no contamination route from the site to the landfill. A private citizen allowed his property to be used as a solid waste dump in return for monetary compensation. EPA's primary concern was the disposal and burning of magnesium grindings and polishing dust waste on the site. Initial groundwater tests performed by EPA revealed the presence of non-reactive magnesium (magnesium that will not react when heated) as well as elevated lead levels in the dump's immediate vicinity.

DHSS and the Missouri Department of Natural Resources (MDNR) also became involved with water sampling around this site. These agencies have been sampling private wells around this site since 1987, and DHSS presently continues sampling seven private wells close to the site. Lead, barium and magnesium are among the parameters being sampled. The drinking water standard established by the EPA for lead is 0.015 mg/l (or parts per million). The standard for barium is 2.00 mg/l. No standards have been established for magnesium.

Analysis of DHSS water sampling data from 1987 to the present, reveals that lead levels were below 0.005 mg/l in all of the samples collected. Barium levels ranged from 0.1 to 2.2 mg/l, with an average barium level of 0.55 mg/l. Only one of the 41 samples collected and analyzed exceeded the drinking water standards. Magnesium ranged from 25.7 to 57.5 mg/l with an average of 44.26 mg/l.

Although EPA has not set drinking water standards for non-reactive magnesium, the World Health Organization (WHO) has set European and International desirable limits in drinking water in the range of 30 to 125 mg/l. Magnesium is a necessary nutrient for maintaining proper body functions. In fact, it is likely to be beneficial in drinking water in concentrations less than 150 mg/l. Therefore, it is apparent that the magnesium levels in the private wells near the Haynes site are satisfactory.

EPA involvement with this site has ceased since the remedial actions of backfilling and grading the site took place in November 2000.

(2) THE BARITE MINES

It is well known that barite mining has been extensive in the area. Mine waste settling ponds, called tailings ponds, are abundant throughout the Richwoods area from barite mines that operated mainly during the 1940s and 1950s. Many of these mines operated prior to present environmental laws, and the environmental agencies have very limited information on them.

There are several tailings ponds upstream of the landfill on Turkey Creek. These tailings ponds are approximately one mile south of the landfill and are associated with a mine known as De Soto Mining Company, Inc. This mine closed in the 1980s. Barite mining has also occurred near the Haynes site. Since DHSS is tracking barium levels, which have been within standards at the Haynes site, it can be concluded that the barite mines have not had any significant effect on groundwater in the landfill's vicinity.

(3) LEAKING GASOLINE STORAGE TANK

This site referenced by SHOW-ME is located at the intersection of highways 21 and 47 near Cruise Mill, Missouri, within a seven-mile radius of the Waco site. In May 2001, a gasoline spill occurred while the Missouri Department of Transportation (MODOT) was constructing a bridge at this intersection, which was the previous location of a gasoline station. One of the old station's gasoline storage tanks was crushed on site during the construction.

MDNR became involved when a nearby family registered a complaint that they smelled gasoline in their water. MDNR sampled the water and soil and confirmed the existence of gasoline. Assisted by DHSS, water samples were obtained from the family's well and from the two wells at the nearby Kingston School. The school's water did not show any signs of contamination. However, the family's well was found to be contaminated.

Subsequently, MDNR replaced the family's well. This was a single incident that affected only one family's well. It was not a widespread plume affecting numerous wells. This site was properly remediated and the case is considered closed by MDNR with no further actions planned.

(4) PFIZER, INC. – KINGSTON MINE

This site was located off highway 47 between Richwoods and Washington State Park near the town of Kingston, within a six-mile radius of the landfill. Pfizer, Inc. disposed of filter cake sludge from their East St. Louis iron oxide pigment plant in an existing tailings pond located in a closed barite mine called the

Kingston Mine. The sludge consisted predominantly of gypsum, iron oxide and barium sulfate. The area affected by the disposal was approximately one acre in size.

MDNR became involved as early as 1976 when the company was notified in writing to stop waste disposal and to apply for a water discharge permit. EPA became involved with the site in 1980 in its efforts to identify companies that had disposed of hazardous wastes prior to EPA and MDNR regulation.

Although the sludge was highly alkaline, EPA determined that it was not considered hazardous waste. By the time EPA began their investigation, Pfizer had already begun to discharge its waste in a local non-hazardous waste landfill in Illinois with the approval of the Illinois and U.S. EPA.

Since Pfizer, Inc. complied with EPA's request to cease material disposal at this location, EPA closed the investigation in 1981 with no further action planned.

(5) PFIZER, INC. – BAKER MINE

This site was similar to the Kingston mine site in that sludge was also disposed of at an abandoned barite mine site. MDNR and EPA activity at this site occurred during the same time as the Kingston mine site investigation. The location of the site was near Ditch Creek and Turkey Creek, within two miles of the landfill. The sludge material was chemically identical to the Kingston site, but it was being used experimentally to reclaim the Baker mine site. EPA's geologist who examined this site approved of the process being used to form cells to dry the sludge, because the mining method left windrows (large mounds of soil) that could be moved to form drying cells.

This geologist also documented that the area was suitable due to the underlying clay soil, but he recommended that this activity be confined to a small portion of the mining area (two to three acres). The Baker site actually employed methods used in modern day mining to form small impoundment cells to allow sludge to dry. The alkalinity of the sludge may even have improved any acidic conditions encountered during the barite mining as gypsum is considered to be a soil conditioner, especially for clay-rich soil.

Activities ceased at this operation when Pfizer began disposing of its sludge at a local Illinois non-hazardous waste landfill. One of the sections of the EPA report concerning this site states that no people or buildings were affected by activities at this site.

POSSIBLE HEALTH EFFECTS FROM EXPOSURE

In relation to the Haynes site, magnesium is a light, silvery-white metal that can ignite and emit irritant gases. Magnesium fumes are a mild irritant of the conjunctiva, nasal mucosa and respiratory system, but magnesium is not specifically toxic. However, non-reactive magnesium, which was found at the Haynes site, does not ignite when heated and does not affect the organ systems mentioned in the SHOW-ME letter. Therefore, it is highly unlikely that this site can be linked to the health problems cited in that letter.

This also appears to be true for the barite mines. The main organ systems affected by barium include the heart, lungs, skin, respiratory system and eyes. Based on water samples taken near the Haynes site, it appears that barium levels are acceptable in this area. In addition, there should be no completed pathways of airborne exposure to site-related contaminants since mining ceased many years ago.

The gasoline storage tank incident occurred approximately seven miles from the site in a totally unrelated watershed and affected only one family who was very briefly exposed. This incident should not produce health problems.

Both Pfizer sites were isolated and did not involve communities having contact with the alkaline substances, which were contained within the mine sites. In addition, EPA did not consider the substances to be hazardous. Therefore, these sites should not have produced any adverse health effects.

In summation, a review of these five sites revealed that adverse health effects are not expected. This is based on a combination of factors, including the varying distances of these sites from one another and from the landfill. Further, because of the distance and different watersheds that were affected, no individual experienced cumulative, long-term exposures that would likely cause any adverse health effects. In addition, the organ systems these chemicals could otherwise affect did not correspond to the problems suggested in the SHOW-ME letter.

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Missouri Department of Health and Senior Services

Five Sites Near the WACO Landfill

Supplement to the DHSS/ATSDR WACO Health Consultation May 19, 2003 Addressing Site Information and Health Concerns